LIBRARY
CURRENT SERIAL RECORD
MAY 14 1947
U. S. DEPARTMENT OF AGRICULTURE

THE PLANT DISEASE REPORTER

Issued By

THE PLANT DISEASE SURVEY

Division of Mycology and Disease Survey
BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING
AGRICULTURAL RESEARCH ADMINISTRATION
UNITED STATES DEPARTMENT OF AGRICULTURE

Volume 31 Number 5

May 15, 1947

The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY
DIVISION OF MYCOLOGY AND DISEASE SURVEY

Plant Industry Station — Beltsville, Maryland
Volume 31 — May 15, 1947 — Number 5

IN THIS ISSUE

Douglas C. Bain and John T. Presley report a Cercospora leaf disease of kudzu, new to the United States, page 188.

Short reports on distribution of diseases, page 189, include notes on occurrence of sweetpotato internal cork in Maryland, by R. A. Jehle, and western celery mosaic in a California area where it had not hitherto been a problem, by Roy Bardin.

Spraying of tomatoes is discussed in two articles from the Geneva station in New York: W. T. Schroeder, page 191, reports that the effectiveness of Zerlate for late blight control is increased by the addition of the adhesive Orthol K; and W. T. Schroeder and G. E. R. Hervey, page 192, state that hornworm damage was less on fungicide-sprayed than on unsprayed tomatoes.

Observations on tomato diseases in plantings on the Plant Industry Station in 1946 are reported by L. P. McColloch and A. C. Foster, page 194.

Late blight is reported on potatoes in Louisiana, by C. W. Edgerton, page 197.

Relative importance of tomato blights in England is briefly noted by I. W. Selman, page 197.

Progress reports on tobacco blue mold, page 198.

K. Starr Chester and D. A. Preston make the 1947 experimental forecast of wheat leaf rust incidence in Oklahoma, page 201.

The various cooperators have summarized the results of the 1946 cotton seed treatment tests, page 204.

Howard P. Barss sends a correction for the 1946 summary on fungicide tests, page 211.

L. Carl Knorr believes the time has come for the designation of new fungicides by common names rather than by initials, page 211.

H. R. Rosen considers the terms "epiphytotic" and "epiphytology" unnecessary, page 213.

In brief notes, page 213, I. M. Atkins reports further estimates of freeze damage to oats in Texas; S. B. Fenne and R. G. Henderson state that alfalfa and clover stem rot is severe in some parts of Virginia; H. R. Rosen questions his earlier claim for resistance of the Richard Peters pear to fireblight; and O. C. Boyd reports unusually early maturity of the apple scab fungus in Massachusetts.

Check list revision, by Freeman Weiss, page 216.

March weather, page 226

A LEAF DISEASE OF KUDZU NEW TO THE UNITED STATES

Douglas C. Bain and John T. Presley

During the summer of 1946, the senior author noted leaf spotting and firing of kudzu (Pueraria thunbergiana) growing along a highway in Newton County, Mississippi. The disease was rather widespread in that area and appeared to be inflicting considerable damage to the foliage. Since it appeared to be distinctly different from other leaf diseases of kudzu, specimens were brought in to the laboratory for examination. At about the same time, the junior author collected similar material from Lauderdale, Carroll, and Union Counties in other parts of the State, and indicated that the disease was also widespread in those areas.

Microscopic examinations revealed only numerous conidia typical of the genus Cercospora. Since no record of Cercospora on kudzu could be found in the literature available, a specimen was sent to Dr. Charles Chupp for species identification along with a request concerning known distribution of the fungus. Dr. Chupp kindly identified the organism as Cercospora puerariicola Yamamoto, and stated that so far as he knew it had been reported only from Formosa and China.

As indicated elsewhere, the disease is noticeably different from other foliage diseases (halo blight, caused by Phytomonas medicaginis var. phaseolicola [Pseudomonas phaseolicola], and web-blight, caused by Rhizoctonia microsclerotia) of kudzu known to occur in this State. The spots vary in size from about 1 mm. up to 7-8 mm., and are more angular than circular in outline. The smaller spots are dark brown, but as they increase in size the center becomes light brown with a narrow dark brown border. On dried material, the spots are usually surrounded by a rather broad irregular pale-green halo. A firing of part or all of the leaf margin, apparently caused by coalescence of spots, was prominent in most of the material seen. The spots are evident on both surfaces of the leaves but on the lower they are a pale grayish brown without a darker border, and necrosis is not so pronounced. Sporulation was abundant on the material examined.

According to Chupp, Yamamoto described C. puerariicola in 1934 in Trans. Sapporo Nat. Hist. Soc. 13: 142, and the Mississippi material closely resembled type specimens in Chupp's collection. As is characteristic of the genus Cercospora, the conidia of C. puerariicola are dark (i. e. not hyaline), but are pale, they are cylindric-obclavate, and vary in size from 3-6 μ x 20-135 μ. Chupp separates this species from two others known to occur on kudzu in the following manner:

Conidia hyaline, acicular . . . . . C. austrinae

Conidia colored, not acicular

Conidia medium dark in color, cylindric, 5.5 - 8 x 30 - 80 μ . . . . . C. puerariae

Conidia pale in color, cylindric - obclavate, 3 - 6 x 20 - 135 μ . . . . . C. pueraricola

Specimens have been filed in the Herbarium of the Department of Plant Pathology, Agricultural Experiment Station, State College, and presumably in the Mycological Collections of the Department of Plant Pathology, Cornell University.

TRUCK CROPS EXPERIMENT STATION, CRYSTAL SPRINGS, MISSISSIPPI, and DEPARTMENT OF PLANT PATHOLOGY, AGRICULTURAL EXPERIMENT STATION, STATE COLLEGE, MISSISSIPPI

SHORT REPORTS ON DISTRIBUTION OR SPREAD OF DISEASES

SWEETPOTATO INTERNAL CORK IN MARYLAND

By R. A. Jehle

Following is a summary of the results of the survey for internal cork of sweetpotatoes in Maryland:

In September, 1946, a few plants with vine symptoms similar to those found to be associated with sweetpotato internal cork were found in one field near Salisbury in Wicomico County and in one field near Glen Burnie and another field near Pasadena in Anne Arundel County. Many plants with the same symptoms were found in a field near Jessups in Anne Arundel County.

In March, 1947, typical root symptoms were found in 23 percent of the roots in a storage house near Hurlock in Dorchester County, in 18 percent of the roots in one storage house and in 5 percent of the roots in another near Salisbury in Wicomico County. All of these observations were made on the Porto Rico variety. No vine or root symptoms have been observed on the Maryland Golden Sweet variety.

UNIVERSITY OF MARYLAND, COLLEGE PARK

WESTERN CELERY MOSAIC IN MONTEREY COUNTY, CALIFORNIA

By Roy Bardin

Early in September 1946 a planting of approximately five acres of Utah type celery in the Pajaro Valley of Monterey County was observed to show at least 25 percent of the plants infected with a mosaic disease. The symptoms resembled those described for western celery mosaic. Specimens from the planting were sent to the State Department of Agriculture and to the University of California, Division of Entomology, for identification. The suspected disease was found by mechanical transmission experiments to be western celery mosaic, a disease not hitherto a problem in Monterey County but important in certain other celery growing regions of the State.

In investigations, the probable source of inoculum could not be accurately determined as the infected field had been planted from seedling stock grown on the premises. Dissemination to nearby fields was noted to some extent. No significantly heavy infection was noted one mile from the original infection center, which by late December had approximately 80 percent infection.

A survey of celery fields in the Salinas Valley was begun in the latter part of September and was continued through the remainder of the season. Only one seriously infected field was found, this being located only two to three miles from the city limits of Salinas. Serious infection was noted on approximately 5 acres of a 20-acre field. Planting stock for this field was obtained outside of the County, from an area not known to harbor western celery mosaic. Spread to nearby fields was not great, and, as in the Pajaro area, no significant spread was noted beyond a one-mile zone. Timely efforts toward control of the aphid vectors on the infected plantings may have been responsible for minimizing disease spread. "Bladan" dusts were used as the insecticide.

Both of the outbreaks were near metropolitan areas.

MONTEREY COUNTY DEPARTMENT OF AGRICULTURE

ORTHOL K ENHANCES CONTROL BY ZERLATE OF PHYTOPHTHORA LATE BLIGHT ON TOMATO

W. T. Schroeder

The possibility of improving the control of certain tomato diseases by Fermate and Zerlate with adhesives was investigated in a field experiment at Geneva, New York, during 1946. Fermate and Zerlate at 2 pounds per 100 gallons were used in plots with and without the two adhesives, Omilite (polyethylene polysulfide) and Orthol K, at 1 and 2 pints per 100 gallons respectively. Bordeaux 8-4-100 and non-sprayed plots served as controls. Each treatment was applied to a single-row plot in random order in each of 4 blocks. Each plot consisted of 10 plants, and was bordered on either side by non-sprayed buffer rows.

Four applications were made with a 6-nozzle per row boom at the rate of 200 gallons per acre through a Number 3 disc at a pressure of 400 pounds. Sprays were applied July 25 and 30, August 9 and 19. Late blight (Phytophthora infestans) appeared on the foliage of the non-sprayed plots at the time of the second spray applications and continued to develop thereafter at a devastating rate, being the predominant disease and accounting for virtually all of the reduced yield. The final harvest was made on October 4, 46 days after the last spray application.

Table 1. The effect of Omilite and Orthol K with Fermate and Zerlate on the control of tomato late blight.

Fungicide	Adhesive		Yield of No. 1 equivalent fruit Tons per acre[a]	Infected fruit Percent
Fermate	Omilite		6.1	63
Fermate	Orthol K		5.5	64
Fermate	none		5.0	68
Zerlate	Omilite		6.4	57
Zerlate	Orthol K		13.9	26
Zerlate	none		4.4	72
Bordeaux	none		20.0	5
none	none		2.2	78
Difference required for significance		(19:1)	2.1	12
		(99:1)	2.8	16

[a]Fruit worth $30 per ton; based on contract price of $30 per ton for U.S. No. 1 and $18 per ton for U.S. No. 2; obtained by taking 18/30 of the weight of No. 2 fruit and adding to weight of No. 1

Harvested fruit from each plot was graded according to U. S. standards and expressed in yields as U.S. No. 1 equivalents. This method of evaluating the effectiveness of the spray treatments is considered a better criterion of disease control than the percentage of infected fruit based on weight, since the fruit on some plots were infected when quite small and did not contribute much to the total weight.

The data indicate that all treatments produced a significant increase in yield over the non-sprayed plots (Table 1). The addition of Orthol K to Zerlate resulted in a substantially greater yield and a lower percentage of infected fruit than Zerlate plus Omilite or Zerlate alone. Neither of the two stickers produced any marked effect when mixed with Fermate. The defoliation resulting from late blight in the various treatments as observed through the season showed the same trend as the yield data. Although Orthol K plus Zerlate was not as effective as Bordeaux against late blight, its increased effeiciency over Zerlate alone may enhance its value against other tomato diseases, such as early blight, Septoria blight, and anthracnose. No reason, other than the possibility of greater retention, is given at present for the increased effectiveness of Zerlate with Orthol K.

NEW YORK STATE AGRICULTURAL EXPERIMENT STATION, GENEVA, NEW YORK

TOMATOES SPRAYED WITH FUNGICIDES SHOW LESS HORNWORM DAMAGE THAN UNSPRAYED TOMATOES

W. T. Schroeder and G. E. R. Hervey

During 1946, in a large experimental tomato plot at Auburn, New York, damage from the tomato hornworm, Protoparce quinquemaculata (Haw.), was noticeably less in the plots sprayed with various fungicide schedules than in those not sprayed.

Each treatment in this experiment consisted of a plot approximately one-half acre in size in random order in each of three blocks. The percentages of plants showing hornworm feeding areas were obtained when the feeding activity of the caterpillars had subsided, and are given in Table 1. Less than 5 percent of the plants in the sprayed plots showed evidence of the hornworm, compared with 19.6 percent in the non-sprayed plots. It was also observed that rarely did any more than one feeding area occur on any one plant in the sprayed plots; whereas, two and three sometimes occurred on the non-sprayed plants.

The extent of hornworm damage was also determined in an experimental plot at Geneva wherein a number of different fungicides were being tested against various tomato diseases. In this experiment each treat-

ment was applied to a 10-plant plot located in random order in each of six blocks. The percentages of plants showing hornworm damage in this experiment are also given in Table 1, and show a differential response to the fungicides. All treatments reduced the amount of damage below that of the non-sprayed plots, but Zerlate, the copper materials, and Dithane (D-14) with zinc sulfate and lime were more effective in this experiment than some of the organic fungicides, such as Fermate, Phygon, and He 178e.

Table 1. Effectiveness of various fungicide sprays against the tomato hornworm at Auburn and Geneva, New York, 1946.

Treatment[a]	Concentration lbs./100 gals.	Percent of plants showing hornworm damage	
		Geneva	Auburn
No spray	--	56.3	19.6
COCS (56%)	4.0	0.0	--
Copper Hydrate (63%)	3.5	3.8	--
Copper Compound A	4.0	6.3	--
Tenn. Tribasic	4.0	2.5	--
Microgel	4.0	0.0	--
Bordeaux	8.0 + 4.0	0.0	--
Z-Z-B-Z-B[b]	2 - 8 + 4	0.0	2.6
Z-Z-T-Z-T[b]	2 - 4	--	4.1
Z-Z-M-Z-M[b]	2 - 4	--	3.8
Zerlate	2.0	3.8	4.5
Fermate	2.0	27.5	--
Phygon	1.0	40.0	--
Phygon	2.0	35.0	--
Dithane (D-14) + $ZnSO_4$ + Lime	2 qt. + 1.0 + 0.5	10.0	--
He 178e	2.0	25.0	--
Least Difference Required For Significance (19:1)		17.5	2.6

[a] Dates of Application: Geneva -- 7/12; 7/20; 8/3; 8/10; 8/21
Auburn -- 7/10; 7/19; 8/3; 8/20; 8/30

[b] Z = Zerlate; B = Bordeaux; T = Tenn. Tribasic; M = Microgel

In another small-plot experiment at a different location in Geneva, the non-sprayed plots averaged approximately 2 feeding areas per 10-plant plot compared with a bare trace in plots sprayed with 5-application alternating schedule of Zerlate and Bordeaux.

None of the spray treatments contained any insecticide, and all were

applied at a pressure of 400 pounds and at a rate of 200 gallons per acre through No. 3 nozzle discs located a foot apart on the boom.

NEW YORK STATE AGRICULTURAL EXPERIMENT STATION, GENEVA, NEW YORK

OBSERVATIONS ON TOMATO DISEASES AT THE PLANT INDUSTRY STATION, BELTSVILLE, MARYLAND[1]

L. P. McColloch and A. C. Foster

A period of unusual weather conditions during the latter part of the growing season of 1946 had a marked influence on the occurrence of certain diseases of tomato in the Atlantic seaboard region. This was shown by field observations on a crop grown at the Plant Industry Station, Beltsville, Maryland, and by holding tests with tomatoes from the experimental field.

The crop was grown on a fairly uniform plot of bottom land similar to Sassafras sandy loam. Commercial fertilizer in the form of 5-10-5 was broadcast at the rate of one ton per acre when the land was prepared for planting. After the plants began to bloom, a side dressing of about 1/2 pound of 5-10-5 was applied to each plant. Shortly afterward, when the fruits began to set, a side dressing was made by placing a small band of ammonium nitrate around each plant.

The plants were set in the field about May 15. Each treatment was applied to 8 randomized replicated plots, each consisting of 4 rows with 17 plants per row. In only one of the treatments was a fungicide used. This was Tennessee tri-basic copper used at the rate of 4 pounds in combination with 0.6 pounds of technical wettable DDT per 100 gallons of water. This treatment proved to be effective and of real interest later when late blight became such a serious problem. This combination treatment was applied as a spray on June 10, 21, July 1, 10, 19, 30, and August 12. The last application of spray was 6 days after the first picking was made.

Tomatoes had been grown on this same plot of ground the previous year, but prior to that the land had been occupied by a cover crop for each of 4 or 5 years.

---

[1]The tomato crop was grown by A. C. Foster for the purpose of determining the effect of various DDT treatments on the plant growth and fruit yield. At the conclusion of his tests the fruits were turned over to L. P. McColloch for studying the influence of temperatures on ripening.

The plants grew vigorously and the vines covered the ground by the time harvest was started. The crop was harvested in the mature green stage and the fruits were washed and graded for U. S. No. 1 as the standard. Test lots were taken at random irrespective of field plot treatment and subjected to various temperatures to study the effect on subsequent ripening, decay, and quality. All lots were finally ripened at 70° F. This afforded a good opportunity for observing the occurrence and extent of diseases causing tomato fruit decay.

Weather Conditions

Weather conditions in July and August were favorable for diseases requiring cool temperatures. A summary of rainfall and temperature is shown in Table 1.

Table 1. Weather record at Station No. 1, Beltsville, Maryland.

July 1946		August 1946	
Precipitation	Inches	Precipitation	Inches
Total	2.85	Total	3.34
No. Days	9	No. Days	8
Greatest	1.60	Greatest	1.76
Temperature	**°F.**	**Temperature**	**°F.**
Maximum	97.0	Maximum	90.0
Minimum	47.0	Minimum	42.0
Average Maximum	86.2	Average Maximum	81.5
Average Minimum	59.9	Average Minimum	57.0

The rainfall for both July and August was below normal, and the average minimum temperature was abnormally low, but the heavy dews which formed furnished the needed moisture for spore germination and fungus development. The epidemic of late blight started under these conditions and increased steadily until the end of the season.

In spite of the cool night temperatures and heavy dews the late blight fungus, Phytophthora infestans (Mont.) DBy., had not attacked the vigorous tomato plants at the time of the first picking on August 6, and none of the disease developed on fruit in the ripening room. A second picking was made on August 14, and at that time late blight lesions were evident on the foliage. On 12 test lots of fruit late blight developed to the extent of a trace up to 7 percent by the time the fruit was firm ripe. It should be borne in mind that the fruit

from only one of the treatments had received a protective fungicide. The vines were now becoming weakened by fruiting and received considerable mechanical injury during the process of harvesting the fruit. Handling the vines also served to spread the spores. Weather conditions were even more favorable for late blight than previously. The last date in August on which the maximum temperature reached 90° F. was the sixth. There were only 5 days after that date when the maximum temperature reached the upper eighties. At the third picking, on August 20, late blight was flourishing and fruiting abundantly on the foliage. Two thousand eight hundred and twenty-four apparently sound fruits placed in test developed 18.5 percent of late blight by the time they were firm ripe. By the time of the fourth picking, on August 28, the plants receiving no fungicide were seriously blighted, and made a striking contrast with those sprayed with tri-basic copper, which were relatively healthy. Fruits from plants receiving no fungicide showed 26 percent infected at time of harvest in a 6-bushel sample taken at random. Of the 2267 apparently sound tomatoes stored in test lots, an average of 43.3 percent developed late blight by the time they were firm ripe. To determine the effectiveness of tri-basic copper in the protection of tomato fruits from late blight a lot from the tri-basic copper treatment was compared with a lot that had received cryolite and sulfur. These fruits were stored at 60° F. for 9 days and examined for late blight with the following results:

(1) Tri-basic copper: 410 fruits in test developed 1.5 percent late blight.

(2) Cryolite and sulfur: 305 fruits in test developed 53.4 percent late blight.

The second most serious loss in tomatoes in the ripening room was due to soft rots. Of this group bacterial soft rot was most abundant and often followed late blight. Oospora lactis parasitica Pritchard & Porte and Fusarium spp. occurred in fair abundance singly and in combination with bacterial soft rot. The loss due to these soft rots in the four experiments was 12.9 percent.

Phoma destructiva Plowr. was found causing fruit decay in both 1945 and 1946. It was much more serious in 1945 following the unusually heavy rainfall in July than it was in 1946. The average decay found in the test lots in 1946 was 5.3 percent. It caused less than 1 percent of decay in tomatoes ripened promptly and increased proportionately with the length of delay before the fruits were ripened. This is the first time this disease has been reported at the Plant Industry Station. J. B. S. Norton reported Phoma causing a leaf spot on tomato in Prince Georges County, Maryland in 1917, but no published report of Phoma causing tomato fruit rot in Maryland has been found.

Alternaria of the tenuis type caused only slight loss in the test

lots during ripening, amounting to 3.1 percent for the season.

Anthracnose caused by Colletotrichum phomoides (Sacc.) Chester usually causes considerable loss in locally grown tomatoes, but amounted to only 2 percent in the tests of 1946. It is assumed that the unseasonably cool weather did not favor the development of this fungus.

Pythium, supposedly P. debaryanum Hesse, has not been reported as causing a tomato fruit rot. In 1945 when the rainfall was high and the temperature normal and in 1946 when both the temperature and rainfall were sub-normal but dews were heavy, this fungus was frequently observed in the field. It destroyed green tomatoes on the plants, but seldom caused decay in the ripening room. As yet it is not an important disease of harvested tomatoes.

DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, BELTSVILLE, MARYLAND

PROGRESS REPORT ON LATE BLIGHT

LATE BLIGHT ON POTATOES IN LOUISIANA: The first report of late blight was on April 7, when blighted potatoes were found in Terrebonne Parish in Southern Louisiana. On April 11 the field in which the first localized infection was noted was visited by L. H. Person. By this time approximately four acres were moderately to heavily infected, with light to a trace of infection in approximately six acres. Several other fields in different areas of the Parish were visited and blight was found to be present in each area visited, however, not in every field. On the same date blight was noted in Lafourche Parish.

Weather conditions have been ideal for blight development and spread. Heavy rains accompanied by wind and cool cloudy weather occurred on April 11, 12 and 13. At this time, indications are that blight will probably cause serious losses in this area as the crop is two to three weeks late, and practically no growers are equipped for spraying or dusting. -- C. W. Edgerton, Louisiana Agricultural Experiment Station. April 15.

TOMATO BLIGHTS IN ENGLAND

I. W. Selman

Early blight (Alternaria solani) is uncommon on outdoor tomatoes in this country. A few scattered cases have occurred during the last few

years, but it has not been recorded on tomatoes under glass.

Late blight (Phytophthora infestans) is much more common on outdoor tomatoes and 1946 was a particularly bad year, when complete loss of crop occurred in many localities. Late blight very rarely occurs under glass.

Control methods vary and one of the commonest in the past was spraying with Bordeaux Mixture. This marks the fruit, however, and the more popular material now is colloidal copper (e.g. Bouisel) which does not disfigure the fruit so badly. Yellow copper oxide (Perenox) is also used as a spray. In every case the spray must be applied before the disease appears and repeated at intervals according to weather conditions and growth of the plant.

The only forcing variety which has so far been recorded as resistant to late blight is Vetomold.

CHESHUNT RESEARCH STATION

PROGRESS REPORT ON TOBACCO BLUE MOLD

The following reports have been transmitted through S. A. Wingard, Chairman of the Tobacco Blue Mold Reporting Committee.

FLORIDA: Reports indicated that blue mold was generally distributed in the flue-cured area by the middle of March. On March 5, recent infection was found in a new burned bed in the cigar wrapper area, indicating that spores were being distributed rather widely.

According to the limited reports from the flue-cured area, the situation with regard to damage and success in control with Fermate dust is similar to that reported from Georgia (see below). Some farmers have reported satisfactory control by following the recommended schedule; a few state that they have observed no signs of blue mold. Others have stated emphatically that the dust did no good, even when they used heavier dosages or a dust with higher percentage than 15% dust. The few observations made in beds where poor control was obtained indicate that the dust was applied improperly; in other cases dusting was not started until blue mold became well established.

Many tobacco plants are being grown in Broward and Palm Beach Counties by Florida farmers and farmers from other States. Blue mold has not been reported from that section, and there seems to be a mad rush to obtain any plants that have not been contracted for. -- W. B. Tisdale; Florida Agricultural Experiment Station, Gainesville. From reports of March 18, April 4

GEORGIA: Climax of the most trying and destructive blue mold attack in Georgia history has just passed. Blue mold continued very active throughout March and all plantbeds have been affected to some degree. In most of the flue-cured beds the peak was prolonged over the first three weeks of March. Temperatures continue submornal. Tobacco plants are still small and have not completely recovered from disease. Blue mold continues active on the few remaining plants in untreated check beds in which the peak was reached in February. The small seedlings have been unable to recover during the unseasonable cold weather, and more of them have been lost each week. The majority of growers will not have plants large enough to set until April 15, if then. April first estimate is that over 70 percent of the flue-cured plants have been lost, owing primarily to mold and cold damage, despite the fact that more spraying and dusting has been done than ever before. There are enough plants left to set the allotted acreage, provided they are evenly distributed and favorable weather persists during the next six weeks. Damage has been much less in the shade area where the disease has not yet run its complete course.

Approximately 75 percent of observed plantbeds have been sprayed (or dusted) to some extent, with varying results. Growers who used more than the recommended amounts of Fermate secured best control. Their beds are in good condition, with no evident disease damage. Those who said they used exactly the recommended amounts generally obtained somewhat less satisfactory results, with considerable plant loss in many instances. Those who used less amounts than recommended secured little, if any, apparent disease control. Many of those who practiced no treatment, or who used nitrate of soda or epsom salts, lost 100 percent of their plants. The situation became most critical in early March when Fermate supplies were exhausted and no more could be made available. No Fermate came into the State after January, except for small insufficient shipments in March. Consequently the spray and dust programs had to be discontinued on many farms just before the disease peak was reached. Fermate gave little residual protection there. Only those growers who originally purchased much more material than was considered necessary for seasonal needs have been able to treat regularly through the season. Owing to the prolonged attack, about twice the usual number of spray and dust applications have been necessary this year. It is now too early to discontinue treatments. No plants have been lost in the Tifton test beds sprayed with Fermate at the 3-pound and 4-pound per 100-gallon rate, or dusted with 15% Fermate at the rate of 1 to 3 1/2 pounds per 100 yards at each application, according to recommendations. It is apparent that most growers have not learned how to spray or dust efficiently, and that they can secure good blue mold protection only when they use increased amounts of fungicide. -- John G. Gaines, Division of Tobacco, Medicinal and Special Crops, U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering, Tifton, Georgia. April 1.

SOUTH CAROLINA: Cold weather has continued throughout March with consequent very slow germination and slow plant growth. Plants are delayed generally three to four weeks later than normal for this area. During a survey on March 23 in Horry and Marion Counties, the majority of beds had plants barely visible up to the square stage. Only an occasional bed had plants as large as a dollar, representing early beds that escaped cold injury, and most of these contained only 5 to 25 percent stands of the larger plants. Practically all such beds were reseeded and generally good stands of young plants are now in prospect.

Blue mold has continued to develop during March with favorable moisture conditions; however, cold weather and lack of plants has slowed its spread. While blue mold is generally distributed in the South Carolina area, it has not yet appeared in many communities. Reliable reports indicate that many growers are using Fermate dust and are effectively checking the disease. At least 100 tons of Fermate dust have been distributed in South Carolina, and are now in the hands of growers who had the foresight to make early purchases. Requests for Fermate continue heavy, although supplies of South Carolina distributors are now exhausted and there is no encouragement that further supplies can be delivered. -- T. W. Graham, Division of Tobacco, Medicinal and Special Crops, U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering, Pee Dee Experiment Station, Florence. March 23

NORTH CAROLINA: Since March 7 and up to the first week in April temperatures were below the optimum for the development and spread of blue mold [Peronospora tabacina] in North Carolina. Following this cool period temperatures rose to the 70's and 80's, April 6-8, with warm weather and dry winds continuing for a few days.

On April 7 and 8 a survey was made in several of the southeastern counties. At that time blue mold was found to be generally distributed in Columbus, Brunswick, Bladen, and Robeson (southern half) Counties, and considerable damage to plants of various sizes was occurring in untreated beds. Many of the older plants that escaped cold injury have been killed by blue mold. The disease was also found in isolated beds in Craven, Sampson, and Lenoir Counties, but little damage had occurred at that time. No further reports have been received since this survey was made. Since April 13 we have had the first optimum temperature and moisture relations for development of blue mold that we have had in North Carolina this year. Predictions indicate weather conditions favorable to blue mold may continue through this week. If so, an epiphytotic may occur in Eastern North Carolina within several days.

Those growers who were able to obtain Fermate and who started spraying before blue mold was present are getting good results. Seventy-five percent of the North Carolina growers (the largest figure in blue

mold history) are interested in controlling blue mold this year, but an acute shortage of Fermate and other materials is greatly handicapping this program. A small quantity of Cuprocide 54Y has been routed from the back of dealers' shelves. This and Yellow Cuprocide are being used by a few growers. They are substituting 1 pint of 70% rubbing alcohol to 50 gallons of bismuth spray for the recommended (but unavailable) Vatsol spreader. A few growers have been using the paradichlorobenzene fumigation treatment. From Columbus County comes this story which points out one of the weaknesses of this treatment: At one location good control with Fermate was obtained while the fumigation treatment in a nearby bed was a failure. Temperatures were too cool for proper volatilization of the para-crystals.

As reported earlier, a large percentage of beds in the southeastern area were reseeded because of cold injury to first seedlings. On April 7 and 8 most of these plants were in the "square" stage with stands generally good. Depending upon weather conditions and blue mold attacks, there should be sufficient plants for setting the normal acreage in Eastern North Carolina, but transplanting will be delayed two to three weeks. A few growers have plants that will be ready for setting at about the normal time. -- Howard R. Garriss, Extension Plant Pathologist, State College Station, Raleigh. April 15.

EXPERIMENTAL FORECAST OF WHEAT LEAF RUST IN OKLAHOMA FOR 1947

K. Starr Chester and D. A. Preston

In 1942 there was proposed a basis for forecasting wheat leaf rust [Puccinia rubigo-vera var. tritici] destructiveness, based on conditions as of April 1. This has been followed by regular April 1 forecasts of leaf rust development in Oklahoma[1]. The forecasts, ranging from prediction of epiphytotic rust in 1945 to very light rust in 1944, in each case have been borne out by subsequent rust development. This usually has not been confined to Oklahoma but has had a counterpart in more northern wheat areas, for which Oklahoma's 6,000,000 acres of wheat furnish windborne inoculum.

The 1946 forecast was for late rust, somewhat heavier than in a "normal year", but not reaching the epiphytotic destructiveness of 1938 or 1945. This proved to be the case. On average wheat in Oklahoma, rust became abundant on the flag leaves when the wheat was submature. A similar situation evidently existed in Kansas, where C. O. Johnston reported [2] heavy infection but occurring so late that it did not result

[1]Plant Disease Reporter 26: 213-217, 1942; Suppl. 143, 1943; 28: 280-287, 1944; Suppl. 156, 1945; 30: 162-165, 1946

[2]Plant Disease Reporter 30: 278-279, 1946

in the damage suffered in 1945. Far to the north, Stakman[3] also recorded 1946 as a season in which leaf rust was not very destructive.

In the fall of 1946 there was an unusually heavy epiphytotic of leaf rust on the new crop[4]. This maintained itself in Oklahoma until early January, when there was a severe freeze, the temperatures dropping suddently to -16° F. after a period of mild weather. This all but wiped out the overwintering rust. On one observation plot of early-planted Pawnee wheat which was yellowed with a concentration of 50 to 60 percent leaf rust in December, very few pustules could be found on January 12, and none at all on January 19, January 26, and February 10.

On later planted Pawnee and Tenmarq wheat, where the rust was lighter in December, there was better rust survival following the January freeze, but throughout January, February, and March the concentration remained low. In the Tenmarq plot which served as an observation plot for periodic rust counts, readings were made of 100 random lower leaves at 10-day intervals. These readings showed the following average numbers of pustules per lower leaf: January 12, 2; January 17, 4; January 26, 2; February 1, 2.12; February 10, 2.84; February 19, 3.32; March 1, 3.72; March 11, 1.71; March 21, 0.42; March 31, 2.08. On this last date there was less than one-half as much as on the corresponding date in 1946. This failure of leaf rust to increase during March and the low level of infection at the end of March is correlated with very dry weather during this period in Oklahoma.

That the low level of rust was characteristic of the State as a whole was confirmed by an inspection of wheat in 20 leading Oklahoma wheat counties, made by the junior author March 27 to 30. In terms of the Cobb rust scale, the following percentages of rust were found in the indicated counties: Beaver, 0; Harper, 0; Woods, 0; Alfalfa 0-trace; Grant, 0; Kay, 0; Woodward, 0; Noble, 0; Dewey, 0; Kingfisher, 0; Logan, 0; Custer 0; Canadian, 0-trace; Washita, 0-5; Comanche, 0-2; Tillman, 1-10; Kiowa, 0-10; Grady, 0; Harmon, 0-5; and Jackson, 0-5.

The rust, in general, was very much lighter than at the same time in 1946, and no rust carryover from the 1946 fall epiphytotic was observed. In numerous cases the same fields were examined as in the fall. In such fields the rust in the fall had been very abundant, and evidence of this was easily found in dead leaves bearing many dead rust pustules, but no living pustules were to be found. Throughout the region surveyed the wheat was retarded about two weeks as compared with the same time in 1946.

It is seen that the extensive survey confirms the intensive study,

---

[3]Cargill Crop Bulletin 21 (13): 13-14, 1946
[4]Plant Disease Reporter 31: 15-17, 1947

indicating a significantly lower concentration of rust April 1, 1947 than in 1945 or 1946, although not as low as in 1944. March rust development appears to be decisive, in Oklahoma, in determining the subsequent rust damage, the weather from April onward having little effect in altering the rust prospects of April 1.

From these findings it is concluded that 1947 in Oklahoma will be a year of no more than normal leaf rust. There is no indication that the rust will become seriously destructive, though it may well become fairly abundant as the crop approaches maturity.

OKLAHOMA AGRICULTURAL EXPERIMENT STATION
April 1

SUMMARY OF COOPERATIVE TESTS OF COTTON SEED TREATMENTS -- 1946

Cooperators: C. H. Arndt, L. M. Blank, S. G. Lehman, D. C. Neal, J. T. Presley, W. W. Ray, C. H. Rogers, D. M. Simpson, A. L. Smith, and V. H. Young

Cotton seed treatments were compared in two tests in 1946. In the "B-Test" Du Pont 1452F and Dow-9B were compared at a rate of 3 g./kg. (1.5 oz./bu.) on fuzzy, fuzzy-matted, lightly-reginned, lightly-reginned matted, heavily-reginned, and acid-delinted seed. The results for 14 plantings in 9 States are summarized in Tables 2 and 3.

In the second, or "C-Test", the treatments listed in Table 1 were compared in part in 11 plantings on two or more kinds of seed, Tables 4 and 5.

Table 1. Treatments compared in "C-Test".

Dust	Active ingredient	Dosage g./kg.
1 - Du Pont 1452F	7.7 ethyl mercury p-toluene sulfonanilide	3
2 - Du Pont 1452F (15%) and Fermate (85%)	As above and ferric dimethyl dithiocarbamate	10*
3 - GCC-668	5% mercury trichloroethylene	3
4 - Dow-9B	50% Zn 2-4-5 trichlorophenate	3
5 - Dow-9B (15%) plus Dow-5, or chloranil, (85%)		10*
6 - Dow-9B (16%) plus Zerlate (84%)	As above and Zn dimethyl dithiocarbamate	10*
7 - A dust composed of 16% paraformaldehyde, 10% benzoic acid, 1% Vatsol-K, 60% dimethylol urea, and 13% Pyrax ABB	HCHO	6

* 10 g. per kg. slightly exceeded the amount that would adhere to the fuzzy seed.

Table 2. B-Test 1946. Seedlings at final seedling count as percent of seeds planted.

Kinds[a]	Locations[c]														
	ARK	GA1	GA2	LA	MS	NC1	NC2	OK	SC1	SC2	SC3	TN	TX1	TX2	Means
LSD-1%	17	6.4	8.8	15	6.4	6.5	6.7	6.5	6.8	7.2	6.3	7.7	9.8	7.0	
Fuzzy	25	24	69	66	67	64	67	66	64	58	72	68	40	45	56.7
Fuzzy-Matted	28	23	65	67	67	66	67	74	61	64	70	68	37	43	57.1
Reginned-1	30	20	66	63	68	55*	70	82*	54*	64	77	68	40	47	57.5
Reginned-Matted	27	16*	66	56	71	58	70	76	51*	66*	72	72	37	43	55.9
Reginned-4	20	15*	66	66	70	61	68	77	50*	61	75	69	36	42	55.4
Delinted	34	29	87*	73	81*	72*	84*	91*	69	80*	91*		53*	57*	
Chemicals[b]															
LSD-1%	10	3.7	5.0	7.3	3.7	3.8	3.9	4.2	3.9	4.2	3.6	4.8	5.7	4.1	
Dow-9B	28	21	69	64	70	64	70	79	58	64	75	69	51*	61	60.9
1452F	27	21	71	66	72	62	72	80	58	68	77	68	57	62	61.5

[a]Asterisks indicate a means significantly poorer or better than fuzzy seed. These means are for sublots treated with Dow-9B and Du Pont 1452F

[b]Asterisks indicate means significantly poorer than 1452F

[c]The planting locations are indicated as follows: ARK, Marianna, Ark., GA1, Plains, Ga.; GA2, Experiment, Ga.; LA, Baton Rouge, La.; MS, Stoneville, Miss.; NC1, Rocky Mount, N. Car.; NC2, McCullers, N. Car.; OK, Stillwater, Okla.; SC1, Lebanon, S. Car.; SC2, Six Mile, S. Car.; SC3, Hartsville, S. Car.; TN, Knoxville, Tenn.; TX1, College Station, Texas; TX2, Greenville, Texas

Table 3. B-Test 1946. Seedlings at final seedling count as percent of seeds planted. Comparison of treatment with Dow-9B and Du Pont 1452F.

	Lab[b]	Locations[d] ARK	GA1	GA2	LA	MS	NC1	NC2	OK	SC1	SC2	SC3	TN	TX1	TX2	Means
Kinds x Chemicals[a]																
LSD-1%		24	9	12	21	9	9	9.5	9	10	10	9	11	14	10	
Sublot																
Fuzzy																
Check	1	19	20	53	54	50	45	58	66	48	48	54	50	43	36	
Dow-9B	75	28	21	66	67	67	69*	65	62	63	56	69	70	52	61	58.1
1452F	82	22	27	71	65	68	59	68	70	65	61	76	66	64	58	60.0
D/C[c]	91	127	78	93	103	99	119	96	89	97	92	91	106	96	105	
Fuzzy-Matted																
Dow-9B	64	26	27	64	65	66	67	66	73	63	65	69	69	49	56	59
1452F	73	30	20	65	68	68	66	68	76	60	62	71	66	50	59	59
D/C	88	87	135	98	96	97	102	97	96	105	105	97	105	98	95	
Reginned-1																
Dow-9B	76	30	19	63	66	67	54	68	79	52	61	75	69	46	62	57.9
1452F	71	31	20	69	69	70	57	72	84	56	68	79	67	60*	62	61.7
D/C	107	97	95	91	96	96	95	94	94	93	90	96	103	77	100	
Reginned-1 Matted																
Dow-9B	56	25	17	66	57	73	60	69	75	54	63	72	74	48	55	58
1452F	63	28	16	66	54	70	56	72	77	47	70	71	70	52	50	58
D/C	89	89	106	100	106	104	107	96	97	115	90	101	106	92	93	
Reginned-4																
Dow-9B	72	23	15	65	65	69	64	68	76	53	58	77	65	45	54	57
1452F	76	18	15	66	68	70	57	69	78	47	64	73	72	53	58	58
D/C	95	128	100	98	96	99	95	99	97	113	91	105	90	85	93	

	Lab	Locations													Means
		ARK	GA1	GA2	LA	MS	NC1	NC2	OK	SC1	SC2	SC3	TN	TX1	TX2	
Delinted																
Dow-9B	87	35	27	86	72	79	70	85	92	67	81	91		66	76	71.3
1452F	87	33	30	89	75	82	74	83	90	72	79	90		75	77	73.0
D/C	100	106	90	97	96	96	95	102	102	93	103	101		88	99	

[a] Asterisks indicate treatments significantly better or poorer than fuzzy seed treated with 1452F

[b] Seed germinated in laboratory under about optimal conditions for seedling infection by the anthracnose fungus. Numbers indicate healthy seedlings per 100 seeds after 14 days

[c] Dow-9B relative to 1452F

[d] For explanation of code for locations see Table 1

Table 4. C-Test 1946. Seedlings at final seedling count as percent of seeds planted.

		Locations[a]										
	Lab	GA1	GA2	LA	MS	NC1	NC2	CK	SC1[d]	SC2	SC3	TN
LSD-1% (KxC)[b]		11	9	15	9	10	9			10	9	13
Fuzzy Seed								6[b]				
1452F	78	27	71	65	64	49	72	70	64	57	76	66
1452F + Fermate	58	19	64	56	62	44	72	64*	52	54	74	62
GCC-668	68	24	64	59	61	49	72	59*	59	56	71	63
Dow-9B	75	21	67	67	67	52	68	62*	61	58	69	70
Dow-9B&5	68			59	58	40	66	55*	61	49		
Dow-9B + Zerlate	64				71[c]	49	71	59*	60	60		
HCHC	56	22	67		56	40	71	61*	53	50		55
Reginned-1								7[b]				
1452F	71	20	69	69	70	48	72	76			79	67
1452F + Fermate		21	62	69	64	52	71	73			71	58
GCC-668	60	19	64	53	68	51	72	72		60	74	63
Dow-9B	70	19	63	58	71	60*	71			58	75	69
Dow-9B&5	66			66	68	50	69	70		57		
HCHO	61	14	53		57	49	66	66*		53		47*
Reginned-4								7[b]				
1452F	77				70			75				
1452F + Fermate	69				61			67*				
GCC-668	69				68			72				
Dow-9B	70				68							
Dow-9B&5	70				67			68*				
HCHO	70				57			67*				
Delinted								9[b]				
1452F	87			75	86			85			90	
1452F + Fermate				57*	80			81			91	
GCC-668				71	87			81			88	
Dow-9B	87			72	85						91	
Dow-9B&5				80	85			80				
HCHO					77			73*				

[a]For explantion of code for locations see Table 1.
[b]These LSD's applicable to all interactions of Kinds x Chemicals, except for OK planting for which the LSD for each kind of seed is indicated by underscored numbers. Asterisks indicate treatments better or poorer than 1452F on same kind of seed.
[c]From B-test
[d]No LSD, data incomplete

Table 5. C-Test 1946. Mean number of seedlings for each chemical when more than one kind of seed (fuzzy and reginned, or fuzzy, reginned, and delinted) was planted, as percent of seeds planted.

Locations[a]	LSD-1%[b]	1452F	1452F + Fermate	GCC-668	Dow-9B	Dow-9B & 5	HCHC
Ga1	8.0	24	20	22	20		18
Ga2	6.8	70	63*	64	65		60*
La	9.0	70	60*	61*	65	69	
Ms	4.3	72	67*	71	73	70	62*
Tn	9.6	66	60	63	69		51*

[a] For explanation of code for locations see Table 1
[b] Asterisks indicate chemicals better than or poorer than 1452F

A lot of Stoneville 2B cottonseed, well infested by the anthracnose fungus, was used. The relative weights of the several kinds of seed were as follows: fuzzy, 100; lightly reginned (R-1), 92.1; heavily reginned (R-4), 89.7; delinted, 96.7. The relatively high weight of the delinted seed was due to the removal of the floaters when the seed were delinted in a commercial delinting machine. Laboratory tests showed that 70 percent of the seed of the original lot were sinkers and that the percent of viable seed for the sinkers was 85, and for the floaters, 60.

There have been occasional reports of apparent injury to cotton seed in reginning, especially when the gin is set for maximum removal of linters. In the heavily reginned seed used in these plantings considerable injury was obvious. In germination tests in the laboratory, it was found that about 30 percent of the seedlings derived from this seed had cotyledons with irregularly cut margins or had holes cut in them. In the Tennessee planting, where untreated seed of this type was planted, the percentages of emerged seedlings for the untreated fuzzy, lightly reginned, and heavily reginned seed were 50, 52, and 30, respectively. However, the corresponding emergences of these same kinds of seed, when treated with the Du Pont 1452F were 66, 67, and 72 percent. Scarification of the seed in this instance apparently rendered the embryos of untreated seeds more susceptible to injury by pathogens. However, in the Mississippi and the Hartsville, South Carolina (SC3) plantings, in which the above three untreated lots were planted also, the number of surviving seedlings for each was about the same. Also, in the laboratory test, in which conditions for seedling infection by the

anthracnose fungus were about optimal, the emergence of the fuzzy and the two reginned sublots were about the same, or 78 percent. After 14 days there was one surviving healthy seedling for the fuzzy seed, 23 for the reginned-1 seed, and 39 for the reginned-4 seed. Consequently, it would appear that some environmental condition must have been the cause of the low emergence of the untreated reginned-4 seed in the Tennessee planting.

Fuzzy and reginned-1 seed on which the lint had been matted by the application of a 2% aqueous solution of Methocel, a methylated cellulose, were included in the B-test to ascertain the possible effect of this treatment on seedling emergence and the facility with which such seeds could be planted uniformly. The fungicidal dusts, Du Pont 1452F and Dow-9B, were applied at a rate of 1.5 g./kg. as a suspension in the matting solution. Since this was only one-half the dosage applied to the other sublots, a similar amount of dust was applied after matting.

The results obtained in the B-test, Table 2, indicate that Dow-9B and Du Pont 1452F were about equally effective, when the number of seedlings surviving until the final seedling count is used as a criterion of effectiveness. The mean number of seedlings for Du Pont 1452F was only 0.6 percent greater than the number for Dow-9B; and only in the TX1 planting was the number for Dow-9B significantly smaller than the number for Du Pont 1452F. Their relative effectiveness is similar when the means for the six kinds of seed are compared, Table 3. Only on reginned-matted seed was the difference between them as large as 4. In the 14 plantings, there were only two instances of significant difference between them, one in favor of each fungicide.

Sublots of seed treated with dusts containing 20%, 30%, and 50% zinc trichlorophenate were compared in several plantings in North and South Carolina. The 50% dust tended to be slightly superior to the others; while the 20% dust was greatly inferior in one planting.

Delinted seed, owing to the removal of floaters, generally produced a greater number of seedlings than the other five kinds of seed. The means for the other five kinds (Table 2) ranged from 55.4 to 57.5, a a difference of no practical significance.

In the C-test Du Pont 1452F and Dow-9B were again about equally effective, with the only significant difference between them in the Oklahoma planting, Table 4. The effectiveness of these two dusts was not improved by the addition of Fermate and Zerlate, Tables 4 and 5. Preliminary tests had indicated that neither of these dusts at dosages of 10 g./kg. would eliminate infestation of the seed by the anthracnose fungus. The combination of Dow-9B and chloranil was not superior to Dow-9B alone, except in the laboratory tests. The dosage of chloranil used may have been too high. The General Chemical Company dust #668 was generally not so effective as Du Pont 1452F. Tests in North and South Carolina, in which the dust was applied at rates of 1.5, 3, and 6 g./kg., indicated that the 6 g./kg. dosage, generally, may be slightly more effective than lower dosages. The dust containing paraformaldehyde and dimethylol urea, generally, was less effective than the better treatments.

COTTON SEEDLING DISEASE COMMITTEE

1946 SUMMARY ON FUNGICIDE TESTS: CORRECTION

In preparing the material for the 1946 Summation of Nation-Wide Results with Newer Fungicides, which has just been issued in mimeographed form, an error crept in on page 6, in the listing of fungicides. The committee regrets the error and asks that all recipients of uncorrected copies make the necessary correction. Compounds 337 and 341 should be listed as coming from Carbide and Carbon Chemicals Corporation, not from Goodrich Chemical Co. -- Howard P. Barss, Chairman, Special Committee on Summarizing Fungicide Results, Potomac Division, American Phytological Society.

COMMON NAMES VS. INITIALS FOR THE DESIGNATION OF NEW FUNGICIDES

L. Carl Knorr

Let's cut out acting cute using initials to designate new chemicals. At one time the trick effectively humanized many long-syllabled chemical names and made them stick in the layman's mind. But now it is only leading to confusion as more and more initials are being added to the list. At present we already have (to mention a few):

BHC (1,2,3,4,5,6, hexachlorocyclohexane)
COCS (copper oxychloride sulfate)
DD (1,2-dichloropropane & 1,3-dichloropropylene)
DDD (dichlorodiphenyldichloroethane)
DDT (dichlorodiphenyltrichloroethane)
DNO (dinitro-ortho-cyclohexylphenol)
DNCC (dinitro-ortho-cresol)
EDB (ethylene dibromide)
EDC (ethylene dichloride)
EDE (ethylene dichloride emulsion)
FDDC (ferric dimethyldithiocarbamate)
HCCH (1,2,3,4,5,6, hexachlorocyclohexane)
HCH (1,2,3,4,5,6, hexachlorocyclohexane)
HETP (hexa ethyl tetra phosphate)
MTDS (morpholine thiuramdisulfide)
PCH (piperonyl cyclohexenone)
PDB (para-dichlorobenzene)
TCP (dichlorophenoxyacetic acid & trichlorophenoxyacetic acid)
TMTD (tetramethylthiuramdisulfide)
2,4-D (2,4-dichlorophenoxyacetic acid)

The initial craze is making extension work unnecessarily difficult.

It has returned numerous inquiries from the field such as: "What's the matter with this 2,4-D; it's not killing any of my flies?", and "Where can I get some DDD to clean up nematodes?"

Entomologists have done more initialling than plant pathologists, and apparently they are now confronted with resultant difficulties, involving not only confusion but also legality. Witness a recent release by the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture in which "1068" is discussed as an inadequate designation for 1,2,4,5,6,7,8, 8-octachloro-4, 7-methano-3_a,4, 7,7_a-tetrahydroindane:

"None of these descriptions or designations [1068, et al.] gives sufficient information to designate accurately the product or inform the investigator in regard to its nature. The description and designations are also inadequate for labelling commercial insecticides containing the product to meet the requirements for interstate movement under the Insecticide Act of 1910.

"At conferences participated in by representatives of the companies producing the product, representatives of the Bureau of Entomology and Plant Quarantine and the Insecticide Division of the Production and Marketing Administration (both of the U. S. Department of Agriculture), and the Food and Drug Administration of the Federal Security Agency, information was developed as the nature of the product, including the name of principal chemical constituents. It was agreed that use of the long exact chemical name is impracticable and undesirable. It was also agreed to propose and recommend the use of a short common name as a substitute, which would be defined and registered with the U. S. Patent Office to preempt its use as a trademark name. It was further agreed that the name and definition would be submitted to interested organizations, particularly the American Association of Economic Entomologists, with recommendation that they adopt it as standard."

The name decided on in this case was "Chlordane".

Plant pathologists, fortunately, have not gone into initialling to so great an extent, and it is hoped that hereafter when a common designation is to be given new chemicals, easily remembered common names will be chosen rather than jumbles of letters which at best mean something only to a chemist. The consequences of initialling can be highly unfortunate in the field, as when 2,4-D was used instead of DDT for the control of codling moth.

EXTENSION SERVICE, DEPARTMENT OF BOTANY AND PLANT PATHOLOGY
MICHIGAN STATE COLLEGE, EAST LANSING, MICHIGAN

UNNECESSARY AND CONFUSING USE OF THE WORDS "EPIPHYTOTIC" AND "EPIPHYTOLOGY"

H. R. Rosen

For quite a few years the writer has been waiting for some one who can claim to be a good student of languages to call attention to the confusion brought about by the use of the words "epiphytotic" and "epiphytology". Since no such student to my knowledge has done so, I believe it is time for a lesser light to flicker.

These words were introduced because some of our eastern friends, sticklers for purity in language usage, found the words "epidemic" and "epidemiology" obnoxious when applied to plants because of their etymology. "Demos" to them could mean only one thing so they chose "epiphytotic" and "epiphytology."

Unhappily, there have existed for many years the well recognized botanical terms "epiphyte" and "epiphytic", so what do "epiphytotic" and "epiphytology" mean -- a study of epiphytes?

Furthermore, the English language is such that the etymology of a word often bears no relationship to its currently recognized meaning. The dictionary is full of such words. For example, we use the word "book" without any regard for the fact that it is derived from buch(e), beech (bark). So why object to "epidemic" or "epidemiology" when applied to plants?

AGRICULTURAL EXPERIMENT STATION, UNIVERSITY OF ARKANSAS

BRIEF NOTES ON PLANT DISEASES

WINTER KILLING OF OATS IN TEXAS BY THE FREEZE IN JANUARY, 1947

By I. M. Atkins

Since my last report on February 3 (PDR 31: 171-173. Apr. 15), covering the winter killing of oats by the January freeze, I have had the opportunity to see a considerable portion of the territory that grows oats in the central part of the State. My earlier estimates were too low. The area from Denton eastward to Greeville and south as far as Hill County lost approximately 80 percent of their oats. This area grew some 350,000 acres in 1939. The acreage that survived is badly thinned so that low yields may be expected. It is estimated that perhaps half of the acreage was replanted to spring oats; the remaining

acreage will be used for other crops. My estimates for the Rolling Plains area were entirely too conservative. Although they had snow cover, oats were seriously damagedin many fields and recovery also has been slow. This additional area of damage, which covers most of the Rolling Plains area and represents an acreage of perhaps 500,000 or more, was damaged from a trace to as much as 60 percent. Perhaps an estimate of an average of 30 percent would not be greatly in error. This area of damage would include that in Central Texas south of the area of heavy damage, perhaps as far south as Austin or Temple. Needless to say the loss to farmers is very great. Losses include not only that from complete killing but from reduced yields of all surviving stands, cost of replanting, reduced yields of spring planted oats, and possible higher losses from rust because of thin stands and late maturity. Although some losses occurred in barley and wheat, these are minor compared to oats in this area.

DIVISION OF CEREAL CROPS AND DISEASES, U. S. BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, DENTON, TEXAS. March 15

UNUSUAL WEATHER CAUSES SEVERE STEM-ROT INJURY ON ALFALFA AND CLOVER IN VIRGINIA

By S. B. Fenne and R. G. Henderson

Severe injury from stem-rot caused by Sclerotinia trifoliorum has been observed in several parts of the State. The most severe injury occurred in the Piedmont and Tidewater areas of Eastern Virginia. In some cases, a 50 percent loss in fall plantings of alfalfa and clover was observed. The loss from stem-rot has been greatly increased by the unusual weather conditions this year -- early warm February temperatures, followed by a long,cold spell in March and April.

Williamsburg alfalfa, a new strain developed by the Virginia Experiment Station, appears to be somewhat reistant to stem-rot. In the Experiment Station plots at Williamsburg, this strain appears to be much more thrifty than other strains, and could be recognized from a distance, because of the thicker and greener stands.

VIRGINIA EXTENSION SERVICE AND VIRGINIA AGRICULTURAL EXPERIMENT STATION

IS THE RICHARD PETERS PEAR RESISTANT TO FIREBLIGHT?

By H. R. Rosen

In 1944 attention was directed to the fact that the Richard Peters pear, with a quality of fruit comparable to that of Bartlett, which had been reported as highly resistant to fireblight [Erwinia amylovora] in Pennsylvania, had also shown resistance to this disease in Arkansas

(56th Ann. Rept., p. 11, 1944). This conclusion was based upon a comparison of the amount of blight shown by this variety contrasted with that on a number of standard commercial varieties when subjected to natural as well as artificial infections.

In view of the fact that some notice was taken of this report by the horticultural press and numerous individuals, it is necessary to note that a single tree, representing a cleft graft made on a 4-year old Kieffer in 1938, has developed a large typical fireblight canker on the trunk of the Richard Peters wood that has been oozing rather copiously with characteristic exudate during the past week or two (March 28 to April 7, 1947). This trunk canker apparently represents an infection initiated on a water sprout in May, 1946. Since such sprouts had previously shown infections on this variety without extending into the limbs or trunk, no more attention was given to this single infection until December. By that time the disease had spread to the main trunk in the area where the graft had been made, and while it extended about one foot upward in the form of a blackish canker involving the whole circumference, it did not extend downward into the Kieffer stock.

While the finding of a single trunk canker on Richard Peters offers insufficient evidence for the degree of susceptibility to fireblight, it does indicate that the writer's previous claim for resistance in this variety may be questioned.

ARKANSAS AGRICULTURAL EXPERIMENT STATION

APPLE SCAB ASCOSPORE DEVELOPMENT ABNORMALLY EARLY IN MASSACHUSETTS

By O. C. Boyd

This is true at least in certain orchards. In no previous season has there been observed so many fully developed perithecia of the scab fungus [Venturia inaequalis], ready to discharge spores, at such early bud stages. Furthermore, in all such cases of abnormally advanced stages of perithecial development, evidence was observed of ascospores having reached maturity in the late fall. Some were dead, and together with the asci bearing them were in various stages of disintegration. In the same perithecia were many immature asci in perfectly normal condition. It looks as though the early dropping of scabbed leaves last fall, and the long, mild fall season following it, proved favorable for full development of some perithecia, at least in the damper locations in the orchards.

With an unusually heavy carryover of the scab fungus, and the early maturity of ascospores as compared with fruit bud development, there is likely to be a greater need than in most past seasons for a fungicide at delayed dormant. In many orchards ascospores will be ready to shoot as soon as any green tissue is exposed. Hence in orchards with a prominent carryover of scab, particularly where a ground spray of a dinitro fungicide has not been applied, greater care than usual should be observed to keep cluster buds and sour leaves protected from the late delayed dormant bud stage onward.

MASSACHUSETTS STATE COLLAGE, AMHERST

CHECK LIST REVISION

Freeman Weiss

AGRIMONIA (ROSACEAE)*

AGRIMONIA spp., AGRIMONY. Perennial herbs of woodlands and waste ground in the Eastern and Central States to Fla. and Tex. A. EUPATORIA L. (1), of Europe, is cult. as a drug plant; A. MOLLIS (Torr. & Gray) Britton (A. pubescens Wallr.) (2); and A. STRIATA Michx. (3) are wildlife food plants; other spp. (4).

Cercospora sp., leaf spot. Ill. (1)
Peronospora potentillae DBy. (P. agrimoniae Syd. ex Gäum.), downy mildew. N.Y., Wis. (1); Iowa, Wis. (2,4); Wis. (3); N.Car. (4)
Phyllosticta decidua Ell. & Kell., leaf spot. N.Car., Wis. (3); Wis. (4)
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (2,4)
Puccinia agrimoniae Arth. (II?, III), rust. Mo. (2). O and I unknown.
Pucciniastrum agrimoniae (Schw.) Tranz. (II,III), rust. General on native spp. as (2), (3) and others from Me. to Fla., N. Mex., Colo., and N.Dak. O and I unknown.
Septoria agrimoniae Roum., leaf spot. Mo. (1); Iowa (2); Wis. (3); Ill., Ind., N.Y., N.Car., Wis. (4). ? S. agrimoniae-eupatoriae Bomm. & Rouss
Sphaerotheca humuli (DC.) Burr., powdery mildew. Mass. to N.Car., Nebr., and Wis. (1,2,3,4)

Mosaic -- unidentified virus. N.Y. (4)

ARUNCUS (ROSACEAE)

ARUNCUS SYLVESTER Kostel., GOATS-BEARD. Tall perennial of woodlands, mostly at high altitudes, in the East and Pacific Northwest; sometimes grown for ornament.

Cercospora sp., leaf spot. Ore.
Leptosphaeria arunci Zeller, on stems. Ore.
Ramularia ulmariae Cke., leaf spot. Alaska.

---

* The genera of this family containing shrubs and trees were covered in earlier sections of this List: PDR vols. 24-26.

DALIBARDA (ROSACEAE)

DALIBARDA REPENS L., DEWDROP. Low perennial of woodlands in the Eastern and North Central States, sometimes grown in rock gardens.

Phyllachora dalibardae (Pk.) Sacc., on leaves. N.Y.
Septoria dalibardae Pk., leaf spot. Me., Mich., N.H., N.Y., Vt.

DRYAS (ROSACEAE)

DRYAS spp., DRYAD. Low evergreen herbs, or somewhat woody, of high altitudes in the Northeastern States and Pacific Northwest; wildlife food plants and also grown in rock gardens.

Massarina dryadis Rostr., on leaves. Alaska
Mycosphaerella ootheca (Sacc.) Magn., on leaves. Alaska.

DUCHESNEA (ROSACEAE)

DUCHESNEA INDICA (Andr.) Focke, MOCK-STRAWBERRY. Trailing perennial of India, naturalized in waste ground in the Eastern and Southern States; sometimes used for ornament or ground cover and furnishes food for wildife.

Frommea obtusa (Strauss) Arth. var. duchesnea Arth. (O,I,II,III), rust. N.H. to Fla. and Ky.
Peronospora potentillae DBy., downy mildew. N.Car.
Pezizella oenotherae (Cke. & Ell.) Sacc., leaf spot. Va.

FILIPENDULA (ROSACEAE)

FILIPENDULA spp., MEADOWSWEET. Tall perennials of meadows and prairies, grown for ornament. F. RUBRA (Hill) Robinson (1) ranges from Pa. to Ga. and Iowa; F. ULMARIA (L.) Maxim. (2), of Europe, is escaped from gardens in the Northeastern States; F. PURPUREA (3), of Japan, is cultivated.

Cylindrosporium sp., leaf spot. Conn. (2,3)
Septoria ulmariae Oud., leaf spot. Conn. (2)
Sphaerotheca humuli (DC.) Burr., powdery mildew. Ind., N.Y., (1); Vt. (1,2)
Triphragmium ulmariae (Hedw. f.) Link (O,I,II,III), rust. Ind. (1)

FRAGARIA (ROSACEAE)

FRAGARIA CHILOENSIS Duchesne var. ANANASSA Bailey, STRAWBERRY. Modern cult. vars. of strawberries are complex hybrids derived from F. vesca L. (European or Alpine s.), F. chiloensis (Pacific Coast s.), and F. virginiana Duchesne (Virginia s.). Grown throughout the U.S. in gardens, the principal commercial producing areas are in La., Ark., Tenn., Ore., Mich.; and generally, from Md. to N.Car. and Mo.; also the Pacific Coast.

Alternaria sp., associated with black-root and root rot. Utah.

Aphelenchoides besseyi Christie, summer dwarf, "crimp". Chiefly in the Southeastern and Gulf States, reported also from Ark., Calif., Del., Ill., Tex.

A. fragariae (Ritz.-Bos) Christie, spring dwarf (red-plant, ? "cauliflower", in Europe). Mass. to Fla. and Tex.; also Ark., Calif., Mich., Tenn., Wash.

Armillaria mellea Vahl ex Fr., mushroom root rot. Calif., Ore., Wash.

(Ascochyta colorata Pk. and A. fragariae Sacc.): Diplocarpon earliana

Botrytis cinerea Pers. ex Fr., Botrytis blight, gray-mold rot of fruit. General.

Cercospora sp., leaf spot. La.

Cladosporium herbarum Lk. ex Fr., associated with black root. Ore. Cosmopolitan as secondary leaf and fruit mold.

Colletotrichum fragariae A.N.Brooks, anthracnose (on petioles and stolons). Fla.

Coniothyrium spp. (in part, C. fuckelii Sacc.), associated with black root. Mich., N.Car., Okla., Utah. See also Leptosphaeria.

Cylindrocladium scoparium Morg., root rot. Tenn.

Dendrophoma obscurans (Ell. & Ev.) H.W.Anderson, leaf blight, angular leaf spot. Mass. to Fla., Tex., and Nebr.; also Mich., Minn., Ore.

Diachaea leucopodia (Bull.) Rost., slime mold on stolons and foliage. Calif., Ill., Kans., La., Miss., Mo., Tenn., Tex.

Diplocarpon earliana (Ell. & Ev.) Wolf, leaf scorch. General.

Diplodia sp., root rot (? secondary). Fla.

Ditylenchus dipsaci (Kühn) Filip., leaf and stem nematode. Calif., N.Car., Ore., ? Tex., Wash.

Erwinia carotovora (L.R.Jones) Holland, soft rot. Mass.

Fuligo septica (L.) Weber, slime mold on stolons and foliage. Iowa, Kans., Minn., Nebr., N.J., Tex., Wash.

Fusarium spp., associated with black root and root rot but pathogenicity unproved. Reported in most strawberry districts -- Southeastern, Eastern, and Central States, Pacific Northwest. Specific identification usually lacking but F. orthoceras App. & Wr., and F. o. var. longius (Sherb.) Wr. (= F. oxysporum Schlecht. em. Snyder & Hansen) have been reported in Md. and

Fragaria cont.

Utah; F. solani (Mart.) App. & Wr. in Utah.

Gloeosporium sp. (? G. fragariae (Lib.) Mont.), leaf spot. Ill., Mass., Pa. Associated with black-root: Mich., N.Car., Utah. G. fragariae is generally considered a synonym of Diplocarpon earliana.

Gnomonia fragariae Klebahn, on dead leaves. N.J.

(Hainesia lythri (Desm.) Hoehn.): Pezizella oenotherae.

Heterodera marioni (Cornu) Goodey, root knot. General in the Southern States from N.Car. to Fla. and Tex.; also reported in Ariz., Calif., Iowa, Kans., Md., Mass., Mich., Wash.

Leptosphaeria coniothyrium (Fckl.) Sacc., associated with black root. Ore. See also Coniothyrium.

(Marssonina fragariae (Sacc.) Klebahn): Diplocarpon earliana

Mucilago spongiosa (Leyss.) Morg., slime mold on stolons and foliage. Kans., Minn., Mo., Nebr., Okla.

Mycosphaerella fragariae (Tul.) Lindau, common leaf spot, black-seed disease. General

M. louisianae Plakidas, purple leaf spot. La., Miss., N.Car. Perhaps identical with Sphaerella earliana Wint.

Neotylenchus abulbosus Steiner, in buds. Calif.

Olpidium brassicae (Wor.) Dang., associated with black root. Utah, ? Ore.

Orobanche sp., broom-rape (parasitic on roots) Wash.

(Patellina fragariae F.L.Stevens & Peterson): Pezizella oenotherae

Penicillium spp., secondary fruit rot, sometimes associated with black-root. Ida., Ore., N.Y., Utah, Wash.

Peronospora fragariae Roze & Cornu, downy mildew. Iowa.

Pezizella oenotherae (Cke. & Ell.) Sacc., tan rot of fruit, secondary rot of leaves and stolons, Chiefly in the South from Md. to Fla. and Okla., also Ill., Me., Ohio, Ore., Wis., Alaska. Associated with black-root or root rot in Mich., Okla., Ore., Tenn.

Phoma spp. (in part Dendrophoma obscurans), on leaves, stolons, and roots. Conn., Fla., Ida., Ill., Ind., Iowa, N.J., N.Car., Ohio

Phyllosticta fragaricola Desm. & Rob., on leaves. Conn., Fla., Ind., Iowa, N.J., N.Car. Perhaps a stage of Mycosphaerella fragariae.

(P. obscurans (Ell. & Ev.) Tassi): Dendrophoma obscurans.

Physarum cinereum (Batsch) Pers., slime mold on foliage and stolons. Ill., Nebr., N.J.

Phytophthora cactorum (Leb. & Cohn) Schroet., leather rot (fruit). Especially in the southern Mississippi Valley, and Gulf States; also Ariz., Md., Mich., Okla., Va.

P. fragariae Hickman, red stele, brown-core root rot. Me. to Va., Okla., and Iowa; also Colo., Mich., Wis., and Pacific States.

Pratylenchus pratensis (DeMan) Filip., root nematode. Tenn.

Fragaria cont.

Pythium spp., root rot, ? black root. Fla., Ida., La., N.J., Ore., Tenn., Utah, Wash. Lilac soft rot of fruit, Tenn.

P. ultimum Trow, root rot. Calif.

Ramularia spp. (in part probably Cylindrocarpon radicicola (McAlp.) Wr.), root rot, ?black root. Ida., Ore., Wash.

(R. fragariae Pk., R. tulasnei Sacc.): Mycosphaerella fragariae.

Rhabdospora fragariae Ark., on old leaves. Md., N.Y. Perhaps identical with Septoria aciculosa.

Rhizoctonia solani Kuehn, root rot, ? black root. Widespread, especially in Pacific Northwest and northern strawberry districts, occasional southward, as Ariz., Fla., Tex. Also causes hard brown rot of fruit, general in the South, and bud rot during winter and early spring from Md. to Fla., La., and Ind. A warm-weather crownrot, attributed to Rhizoctonia sp., not R. solani, is reported in Fla.

Rhizopus spp. (chiefly R. stolonifer (Ehr. ex Fr.) Lind, black rot, soft rot, leak (of fruit). Cosmopolitan.

Sclerotinia sclerotiorum (Lib.) DBy., crown rot. Md. to Fla., Tex., and Ill.; Calif., Iowa, Minn.

(Sclerotiopsis concava (Desm.) Shear & Dodge): Pezizella oenotherae.

Sclerotium rolfsii Sacc., southern blight. Ala., Fla., N.Car., Tex.

Septoria aciculosa Ell. & Ev., on old leaves. Ill., Md., N.Y., Va., W.Va. See also Rhabdospora fragariae

Sphaeropsis sp., fruit rot. Colo., Ill.

Sphaerotheca humuli (DC.) Burr., powdery mildew. General in middle and northern districts, including the Pacific States; rare in the South but reported from Ala., Ark., Okla., Tex. Var. fuliginea (Schlecht.) Salm. also reported in Wash.

Stemphylium sp. (? S. botryosum Wallr.), associated with black root. Ore.

Verticillium albo-atrum Reink. & Berth., wilt. Calif., N.Y., Ore., ? Wash. Verticillium sp., associated with black root, is reported from Ida.

Crinkle -- virus (Marmor fragariae Holmes, Fragaria virus 2 K.M. Sm.). Calif., Ida., Ore., Wash.; also reported but not confirmed in N.Y. and Okla.

Leaf roll -- unidentified virus. Md., N.J., N.Y., Vt.

Stunt -- virus (Nanus cupliformans, Fragaria virus 5 Zeller & Weaver). Ida., Ore.

Witches'-broom -- virus (Nanus fragariae Holmes, Fragaria virus 3 K.M.Sm.) Ida., Mont., Ore., Wash.; reported also in Minn. and N.J. but not confirmed.

Yellow-edge (Xanthosis) -- virus (Marmor marginans Holmes, Fragaria virus 1 K.M.Sm.). Calif., Ore., Wash.; perhaps also in Northeastern and Middle Atlantic States when introduced from Western States.

Fragaria cont.

Black-root -- cause uncertain: in part parasitic (see Pythium, Ramularia, Rhizoctonia); in part environmental and physiological, attributed to winter injury, defective drainage, and soil toxins. Widespread, especially in middle and northern strawberry districts; also Ala., Ariz., Fla., Colo., Tex.

"Catface" -- fruit deformity attributed to insects (Lygus spp.) or mites (Tarsonemus spp.) Ida., N.Y.

Dwarf (crimp). See Aphelenchoides besseyi and A. fragariae

Leaf variegation (Blakemore yellows, June yellows, gold disease, "mosaic" of some early reports)-chlorophyll deficiency occurring especially in Blakemore, Progressive and related vars. General.

FRAGARIA spp., NATIVE STRAWBERRIES as F. AMERICANA (Porter) Britton (1), F. BRACTEATA Heller (2), F. CHILOENSE Duchesne (3), F. VIRGINIANA Duchesne. (4).

Cercospora vexans Massal., leaf spot. Wis. (1,4) N.Y. (4)

Dendrophoma obscurans (Ell. & Ev.) H.W.Anderson, leaf spot. Conn., Ind., Md., N.Car. (4)

Diplocarpon earliana (Ell. & Ev.) Wolf, leaf scorch. Mo., Nebr. (1); Colo., N.Mex. (2); Calif., Ore. (3); Ga., Miss., N.Y., N.Car. (4)

Ditylenchus dipsaci (Kuehn) Filip., leaf nematode. Calif., Ore. (3)

Fabraea dehnii (Rabh.) Nannf., on leaves. Mont. (1?)

Pezizella oenotherae (Cke. & Ell.) Sacc., leaf spot, fruit rot. Me., Md., N.J., N.Y., Wis.

Mycosphaerella fragariae (Tul.) Lindau, leaf spot. General (1, 4); Colo., Utah (2); Alaska, Wash. (3)

Phyllactinia corylea Pers. ex Karst., powdery mildew. Wash. (2)

Phyllosticta fragaricola Desm. & Rob., leaf spot. N.Car. (1)

Rhabdospora fragariae Atk., on leaves. N.Y. (1)

Rhizoctonia solani Kuehn, root and stem rot. Wash. (3)

Sclerotium rolfsii Sacc., southern blight. Fla. (1,4)

Sphaerotheca humuli (DC.) Burr., powdery mildew. Pa. (1), Alaska (3), Mass. (4)

Synchytrium aureum Schroet., leaf gall. Wis. (4)

Crinkle -- virus (Marmor fragariae Holmes, Fragaria virus 2 K.M. Sm.) Ore. (3)

GEUM (ROSACEAE)

GEUM spp., AVENS. Perennial herbs of temperate and subarctic regions, several of which are grown for ornament; in the U.S., chiefly forms of G. CHILOENSE Balb. ex Ser. (1). Some of the native American spp., which include G. CANADENSE Jacqu. (2), G. MACROPHYLLUM Willd. (3), G. RIVALE L. (4), G. STRICTUM Soland.

Geum cont.
in Ait. (5), G. TRIFLORUM Pursh (6), and G. VIRGINIANUM L. (7), may be used in wild gardens; (4) also in pharmacognosy.

Cercospora gei Bub., leaf spot. Wis. (6)
Cylindrosporium gei Farl., leaf spot. N.H., Wis. (sp.)
C. triflori H.C.Greene, Wis. (6)
Erysiphe polygoni DC., powdery mildew. Alaska (3)
Heterodera marioni (Cornu) Goodey, root knot. (sp.) Calif.
Marsonia adunca Sacc., leaf spot. Mont., Wash. (3); Ida. (5)
Peronospora potentillae DBy. (P. gei Syd. ex Gäum.), downy mildew. Calif. (1); Ill., Ind., Iowa, Kans., Nebr., Wis. (2); Wis. (3,4,5); Va. (sp.)
Phyllosticta sp., leaf spot. Wis., W.Va. (2)
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (2,5)
Puccinia sieversii Arth. (III), rust. On G. rossii R. Br. in Colo.
Ramularia gei (Fckl.) Lindau, leaf spot. Wis. (5,6); Mo. (sp.)
Probably identical with Cercospora gei and perhaps with Cylindrosporium gei and C. triflori; also reported as Ovularia gei Eliass.
Septoria gei Rob. & Desm., leaf spot. Ill., Mich., Nebr., Ohio, Wis. (2); Vt., Wis., Wyo. (3); Mich., Wis. (5); Del., Mass., N.Y., Wis. (7); Ill., Alaska (sp.)
Sphaerotheca humuli (DC.) Burr., powdery mildew. Ind., Md., Nebr., N.Dak., Ohio, Wis. (2); Wash., Wis. (3); Mich. (4); Pa., Wash., Wis. (5); N.Y., Wis. (7)
Synchytrium aureum Schroet., leaf gall. Wis. (2,5,7)
Urocystis (?) waldsteiniae Pk., leaf smut. Mont., Wash. (6)

GILLENIA (ROSACEAE)

GILLENIA STIPULATA (Muhl.) Trel., American ipecac (1), and G. trifoliata (L.) Moench, bowmansroot (2). Perennial herbs of the Eastern and Central States southward, sometimes grown in wild gardens; (2) also used in pharmacognosy.

Gymnosporangium exterum Arth. & Kern. (O,I), rust. Ind., Ky., Mo., N.Car. (1); Tenn., Va., W.Va. (2). III on Juniperus virginiana L.

IVESIA (ROSACEAE)

IVESIA spp. Perennial herbs of foothills in the Rocky Mountain and Pacific States, sometimes grown in wild gardens.

Phragmidium horkeliae Garrett (III), rust. On I.gordonii (Hook.) T.&G. in Utah.

Ivesia cont.
P. ivesia Syd. (I,II,III). On I. serioleuca Rydb. in Calif.
P. jonesii Diet. (O,I,II,III). On I. baileyi Wats. in Nev. and Ore.; I. gordonii in Utah.

POTENTILLA (ROSACEAE)

POTENTILLA spp., CINQUEFOIL, FIVE-FINGER. Mostly perennial or biennial herbs (except P. fruticosa) of many kinds, distributed throughout the U.S.; divided somewhat arbitrarily for the purpose of this list into (a) ornamental and pharmaceutical herbs, (b) range plants of minor food value for livestock and wildlife or useful in erosion control, (c) miscellaneous native and introduced spp., sometimes weeds in cultivated ground; (d) P. fruticosa, a native shrubby sp. sometimes grown for ornament.

(a) Ornamental and pharmaceutical spp., as P. ANSERINA L. (1) of Europe, P. ARGENTEA L. of Europe and N. America (2), grown or collected for astringent constituents; P. GRANDIFLORA L. (3) of Europe and P. NEPALENSIS Hook. (4), of Asia, grown for ornament.

Marssonina potentillae (Desm.) Magn., leaf spot. Calif., Colo., Mass., Mich., N.Mex., N.Y., Wis. (1); N.Mex. (2)
Fabraea dehnii (Rabh.) Nannf., leaf spot. N.Y., Vt. (2)
Peronospora potentillae DBy., downy mildew. N.J. (3,4)
Phyllosticta anserinae Tehon, leaf spot. Ill. (1)
Ramularia arvensis Sacc., leaf spot. Wis., Alaska (1)
Sphaerotheca humuli (DC.) Burr., powdery mildew.

(b) Range plants, as P. FILIPES Rydb. (1), P. GLAUCOPHYLLA Lehm. (2) P. NUTTALLII Lehm. (3), and related spp. (4). Perennial or biennial herbs of mountain meadows in the Western States, of some forage value to livestock and wildlife.

Peronospora potentillae DBy., downy mildew. Wyo. (3)
Phragmidium biloculare Diet. & Holw. (I,III), rust. Wash. (3,4); Calif., Ida. (4)
P. ivesiae Syd. (I,II,III), rust. On all the listed spp. within their range from Mont. to Colo., Calif., and Wash.
Sphaerotheca humuli (DC.) Burr., powdery mildew. Ore., Wash. (1)

(c) Weeds and wildlife food plants, as P. CANADENSIS L. (1), P. MONSPELIENSIS L. (2), P. NORVEGICA L. (3), P. PALUSTRIS Scop. (4), and others (5); most are rich in tannin.

Cercospora comari Pk., leaf spot. N.Y. (4)
Discosia potentillae Tehon, leaf spot. Ill. (1)

Potentilla cont.

Fabraea dehnii (Rabh.) Nannf., leaf spot. Vt. to Miss., Mo. and N.Dak. (2,3)

Frommea obtusa (Strauss) Arth. (O,I,II,III), rust. Me. to S.Car., Ark., and Minn.

Marssonina potentillae (Desm.) Magn., leaf spot. Wis. (1,2,4,5); Mich. (2); Calif., Wash. (5)

Mycosphaerella sp. (Sphaerella potentillae Oud.) Colo. (1), Minn. (2)

M. innumerella (Karst.) Schroet., on leaves. Wis. (4)

Peronospora potentillae DBy., downy mildew. Mass. to Md., Kans., and Wis. (2,3); N.Dak. (5)

Pezizella oenotherae (Cke. & Ell.) Sacc., leaf blight. Va. (1)

Phragmidium ivesiae Syd. (I,II,III), rust. Colo., Mont. (2) N.Y., Pa. Wis. (5)

P. potentillae (Pers.) Karst. (O,I,II,III), rust. Conn., Me.,Pa., (2); Me., N.H., N.Car., also Minn. to Nebr., N.Mex.,and Ore. (5)

Pucciniastrum potentillae Kom. (II,?III), rust. Fla. (2); Me. to Tenn. and Minn. on P. tridentata Soland.

Pyrenopeziza coloradensis Ell. & Ev., on stems. Colo. (1)

Ramularia arvensis Sacc., leaf spot. Wis. (1); general (2,3); N.Y., Wyo., Alaska (5)

Sclerotium delphinii Welch, crown rot. Conn. (1)

Septogloeum potentillae Allesch., leaf spot. Wis. (4)

Septoria purpurascens Ell. & G.Martin, leaf spot. N.Y. (3), Wis. (5)

Sphaerotheca humuli (DC.) Burr., powdery mildew. Mich. (2,4); Wis. (4); Calif., Colo. (5)

Stigmatea potentillae Fr., on leaves. Mass. (1); Calif., N.Car. (5). Reports of Sphaeria potentillae Schw. on (1) in Ark., Ga., Ill., Mass., Mo., Ohio, and Wis. appear to belong here. This fungus appears to be the same as that known in Europe as Coleroa potentillae (Fr.) Wint.

Synchytrium aureum Schroet., leaf gall. Pa. (1)

? S. potentillae (Schroet.) Lagh., leaf gall. Mass. (1)

Taphrina potentillae (Farl.) Johans., leaf blister. Ind., Mass., Miss., N.Y., Tenn., Wis. (1); Colo., N.Car., Wis. (5)

Mosaic -- undetermined virus. N.Y. (4)

(d) P. **FRUTICOSA** L., BUSH CINQUEFOIL. Low shrub of mountain meadows and moist ground, ranging in the Northeast from Me. to N.J., Ill. and N.Dak.; in the West from Mont. and Ida. to N.Mex. and Calif.; of minor forage value to livestock and wildlife and useful in erosion control; sometimes grown for ornament, in some localities a weed.

Erysiphe polygoni DC., powdery mildew. Colo.

Phragmidium andersonii Shear (I,II,III), rust. General.

Sphaerotheca humuli (DC.) Burr., powdery mildew. Colo., Wis.

SANGUISORBA (ROSACEAE)

SANGUISORBA CANADENSIS L., AMERICAN BURNET (1), and S. SITCHENSIS C. A. Mey., SITKA B. (2). Perennial herbs of meadows and bogs, (1) in the Northeastern States to Ga., (2) in the Pacific Northwest to Alaska; wildlife food plants and sometimes grown for ornament. Other spp. (3).

Graphium sessile Dearn. & House, leaf spot. N.Y.(1)
Ovularia bulbigera (Fckl.) Sacc., leaf spot. Ill. (1), Alaska (2)
Sphaerotheca humuli (DC.) Burr., powdery mildew. Mass., N.Y., Pa. (1), Alaska (3)
Xenodochus carbonarius Schlecht. (I,III), rust. Alaska (3)
X. minor Arth. (III), rust. Alaska (2)

WALDSTEINIA (ROSACEAE)

WALDSTEINIA FRAGARIOIDES (Michx.) Tratt., BARREN STRAWBERRY. Perennial creeping herb of woodlands of the Northeastern and North Central States to Ga., sometimes planted in rock gardens.

Gnomonia waldsteiniae Dearn. & House, on leaves and petioles. N.Y.
Puccinia waldsteiniae Curt. (III), rust. Mich., N.Y., Vt., Wis. Also on W. idahoensis Piper in Ida.
Ramularia waldsteiniae Ell. & J.J.Davis, leafspot. Wis.
Septoria waldsteiniae Pk. & G.W.Clint., leaf spot. Mich., N.Y., Vt.
Urocystis waldsteiniae Pk., leaf smut. N.Y., Wis.

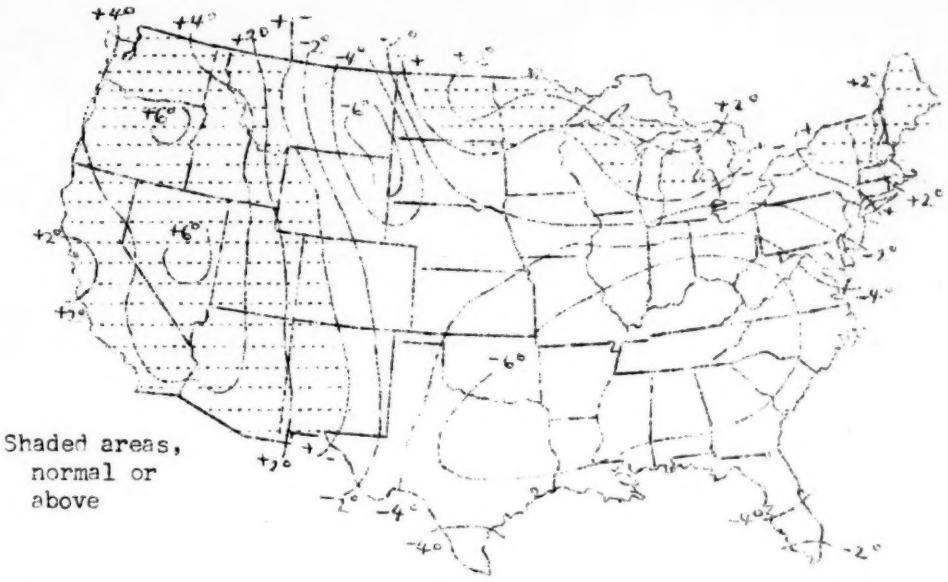
DIVISION OF MYCOLOGY AND DISEASE SURVEY

MARCH WEATHER

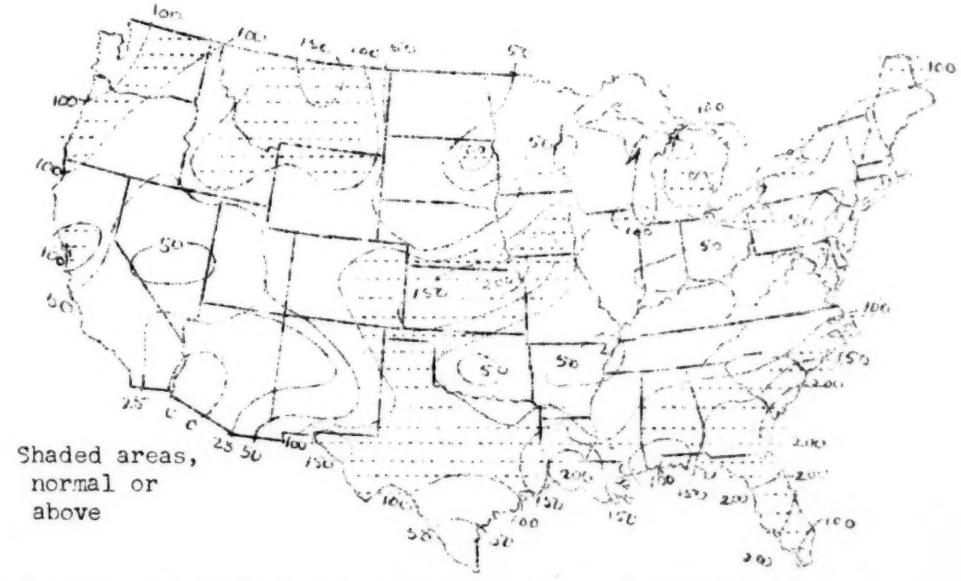
(From U. S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for week ending April 8, 1947)

Map I shows that March 1947 averaged much warmer than usual west of the Continental Divide and considerably colder elsewhere, except normal to a few degrees above in North Dakota, northern Minnesota, the northern Lake region, northeastern New York, and New England. Mean temperatures for the month ranged from 8° below normal in northern Alabama and middle Tennessee to 6° above normal in sections of Nevada and eastern Oregon.

Precipitation for March, as presented by Map II, was heavy in the Southeast, from Louisiana westward over the middle portion of Texas, and in Kansas, northern Missouri, Montana, and western Oregon; elsewhere, totals were generally light to moderate. More than twice the usual precipitation was received on the South Carolina and Georgia coast and in Florida, southern Louisiana, northeastern Kansas, and northwestern Missouri. On the other hand, most stations in Oklahoma, Arkansas, southern Indiana, southern Ohio, Maryland, the northern Great Plains, the Great Basin of the far West, and the far Southwest reported less than half their usual monthly amounts.



Map I. Departure of mean temperature from normal, March 1947



Map II. Percentage of normal precipitation, March, 1947